

### THE OFFICE ACTION

In the Office Action, the Examiner made several rejections. The Examiner indicated that the Declaration was defective for failure to properly claim the benefit of the PCT International application. The Examiner indicated that a new oath or declaration is required.

The Examiner also rejected claims 1 and 7-13 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,360,420 to Fletcher et al ("Fletcher") in view of U.S. Patent No. 4,154,670 to Forsberg ("Forsberg"). The Examiner also rejected claims 2-6 under 35 U.S.C. §103(a) as being unpatentable over Fletcher in view of Forsberg and further in view of U.S. Patent No. 4,021,333 to Habiby et al.

### REMARKS

The Office Action mailed May 19, 2003, has been given careful consideration by the Applicants. Reconsideration of the application is hereby respectfully requested in view of the above-amendments and the following comments. Claims 1, and 5-13 remain pending in the application.

With regard to the Declaration, a new Declaration is enclosed herewith. Applicants respectfully request withdrawal of this objection.

#### Claims 1 and 7-13 are Not Obvious over Fletcher in View of Forsberg

The Examiner rejected claims 1 and 7-13 under 35 U.S.C. §103(a) as being unpatentable over in view of Forsberg. Applicants respectfully traverse.

Fletcher discloses a process for refining used oil containing lubricating oil. The process has several steps. First, a volatile forecut is removed from the used oil. The resulting oil is then distilled under reduced pressure to form heavy and light fractions with a portion of said light fraction recycled and mixed into the resulting oil prior to the resulting oil entering the evaporator unit. A heavy lube oil fraction is then obtained from the heavy fraction using evaporation at reduced pressure. The fractions are then mixed with tetrahydrofurfuryl alcohol to remove impurities.

Fletcher is thus clearly directed toward the recycling of a portion of the distillate into a resulting oil in a way to effectively lower the temperature of the evaporation step. This is clearly indicated in the specification which states:

Thus, in one aspect, the present invention relates to the increased yield of recovered lubricating oil without subjecting the waste oil feedstock to temperatures that create conditions that can cause coking, cracking or fouling. In another aspect, this invention relates to a process for varying the recycle of light ends to achieve the desired viscosity of lubricating oil. Still another aspect of this invention relates to reducing the temperature while achieving the desired recovery of lubricating oil from the waste oil feedstock.

Thus, Fletcher only discloses heating the residue in the second stage to 250°F to 500°F (121°C-260°C). It actually teaches away from the higher temperatures claimed in the present application (170-385°C) to avoid coking, cracking and fouling.

In addition, Fletcher does not mention the aspect of providing a process in which the removing of noxious substances in particular PCB's is improved. In particular, Fletcher does not disclose the extraction of fractions with N-Methyl-2-pyrrolidone ("NMP") and/or N-formylmorpholine ("NMF").

Forsberg discloses a method for refining used oil by first diluting it with a non-polar solvent and removing insoluble impurities from the oil-diluent mixture by known methods. This solution is then mixed with an organic liquid extractant that is immiscible with the oil-diluent mixture to remove impurities soluble in the extractant. The extractant may be, *inter alia*, NMP or various morpholines. Forsberg discloses a completely different process than Fletcher. That is, Fletcher is concerned with the separation of used oil into different forecuts using distillation. Forsberg, on the other hand, is simply concerned with the extraction of impurities from used oil using solvent extraction methods. Forsberg does not disclose an extraction step in direct combination with previous distillation steps. Thus, while Fletcher is primarily concerned with the extraction of different forecuts from waste oil, Forsberg is only

concerned with the solvent extraction of impurities from a used oil. They disclose completely different processes to accomplish their objectives, and neither addresses the removal of PCB's during the reprocessing of waste oil.

One seeking to remove PCB's during the reprocessing of waste oil would have no motivation to combine Fletcher and Forsberg because they use different methods to accomplish different goals. Fletcher, as detailed above, relates to the reprocessing of used lubricating oils using temperatures and conditions that prevent coking, cracking, or fouling. Forsberg, on the other hand, does not relate to the reprocessing of waste oils but simply to the extraction of impurities. Neither relates to the removal of environmentally noxious substances including PCB's in a waste oil. Thus, there is no motivation to combine the two references. Consequently, it would not have been obvious for the skilled artisan to combine the teachings of Fletcher with the teachings of Forsberg. Moreover, each of Fletcher and Forsberg are directed to different reprocessing techniques. The only basis or suggestion to combine the techniques arises from the teaching of the present invention.

According to MPEP §2143.01, the "fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness." Merely because claimed elements are individually found in the prior art, it does not necessarily follow that it would be obvious to combine the elements from different prior art references. See, MPEP §2143.01 *citing Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). Consequently, absent a motivation to combine or modify the references, it is irrelevant that the elements and/or limitations may be individually or separately known in the prior art. Clearly, the Examiner is motivated to modify Fletcher for no other reason than to arrive at the claimed invention. This is a classic example of impermissible hindsight.

In this respect, Applicants would like to point out that Fletcher specifically discloses only the use of tetrahydrofurfuryl alcohol as an extracting solvent. NMP and NMF were known and widely available at the time of Fletcher's

invention, yet were not mentioned as suitable extracting solvents. In fact, Fletcher fails to disclose a single additional solvent suitable for use in his invention. In this respect, tetrahydrofurfuryl alcohol is not merely mentioned as an exemplary solvent, but is in fact the only solvent disclosed or claimed. Thus, one is forced to conclude that ONLY tetrahydrofurfuryl alcohol provides results acceptable for the invention of Fletcher. To attempt to combine the teachings of Forsberg would thus contradict the express teachings of Fletcher, and for this reason is impermissible.

Even if Forsberg and Fletcher could somehow be combined, they would still not disclose or suggest all of the elements of the present claims. Specifically, claim 1 now recites that waste oil is treated with aqueous potassium hydroxide during the distillation step. Nowhere does Forsberg or Fletcher or a proposed combination of the two disclose or suggest such a step. For at least these reasons, the combination of Fletcher, and Forsberg fails to render the present claims obvious under §103(a).

**The Present Claims are Not Obvious Over Fletcher in View Forsberg and Further in View of U.S. Patent No. 4,021,333.**

The Examiner rejected claims 2-6 under 35 U.S.C. §103(a) as being unpatentable over Fletcher in view of Forsberg and further in view Habiby. The subject matter of previous claims 2 -4 have been incorporated into independent claim 1.

First, a combination of Fletcher and Forsberg is improper as detailed above. Thus, a combination of the two references with Habiby is also improper.

Second, and as mentioned in the previous response and despite the Examiner's assertion, Habiby discloses treating the waste oil with an alkaline solution prior to the distillation, rather than during the distillation. This is clearly shown in the paragraph beginning in column 4, line 3 which states that:

The advantage of alkaline treatment is that metallic constituents of the used oil are concentrated in a solid sludge which is readily removed in the subsequent dilution step, resulting in a relatively clean material to be subjected to distillation. (emphasis added)

The Examiner attempts to sidestep this requirement by stating that "It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have added the alkaline solution during distillation because the alkaline treatment is conducted at elevated temperatures. Therefore, one would expect the alkaline treatment to achieve the desired results if the alkaline solution is added during the distillation since the distillation is conducted at elevated temepratures." (Office Action, page 5).

The Examiner might have an argument here if Habiby were silent as to when the alkaline treatment occurred and simply stated that it was conducted at elevated temperatures. However, in present circumstances, the Examiner is attempting to completely disregard the express teachings and claims of Habiby. Habiby specifically states that "A further optional step in the method of this invention involved heating the used oil with an aqueous solution of a strongly alkaline material prior to the addition of the diluent discussed hereinabove" (col. 3, lines 57-60, emphasis added). This is read in conjunction with Habiby's previous disclosure that "it is frequently advantageous to employ a preliminary step of adding a diluent to said oil and removing insoluble purities from the solution in said diluent" (col. 3, lines 35-39, emphasis added). Thus, Habiby clearly discloses that the alkaline treatment occurs prior to the addition of the diluent, which in turn is prior to the distillation step.

It is impermissible for the Examiner to simply disregard these express limitations clearly outlined in Habiby in an attempt to meet all the elements of the present claims. In this respect, prior art must be considered in its entirety, including disclosures that teach away from the claims. MPEP §2145(X)(D). The Examiner simply presents no motivation why one would seek to modify the references to produce the claimed invention.

The surprising benefits of adding the potassium hydroxide during distillation are outlined in the present application, which states:

At the same time one obtains, by means of the dehydration process executed in the initial step A), the concentration of the potassium hydroxide as an extremely homogeneously distributed, highly concentrated and therefore highly effective acting reagent for binding acid constituents in the charged waste oil, including extensive demetallization of the charged waste oils. Furthermore, the use of potassium hydroxide solution, which causes formation of specific "soaps", produces in the subsequently described thin film evaporation in step C), a particularly free-flowing and homogenous distillation residue. In contrast thereto, other alkalies, such as sodium compounds described in US-PS 4,021,333, for example, tend to produce precipitations and agglomerations, which can significantly interfere with the further process sequence. By utilizing potassium hydroxide solution it is possible to further improve the purity of the lubricating oil distillates and during the subsequent extraction, additional benefits are obtained with respect to process mode and chemical effect. In addition, by way of this type of alkaline treatment, it is possible to do away with a further step for mechanical separation of solid precipitations. (page 5, lines 6-20)

This demonstrates the benefits of adding the potassium hydroxide during distillation, which is not fairly disclosed or suggested by the cited prior art. Thus, a combination of Habiby with the prior noted references fails to the present claims obvious.

#### **The Allowability of The Corresponding European Application**

Applicants would like to inform the Examiner that European Application No. 99 971 836, corresponding the present application and containing claims substantially similar as those presented herein, has been indicated as allowable. While Applicants realize that the Examiner is not bound by the decision of the European Examining Authority, Applicants submit that the allowance of this corresponding application is some indication of the novelty and non-obviousness of the present claims.

#### **CONCLUSION**

In view of the forgoing, the Applicants submit that claims 1 and 5-13 are in condition for allowance. Applicants respectfully request early notification of such allowance. Should any issues remain unresolved, the Examiner is encouraged to contact the undersigned to attempt to resolve any such issues.

Appl. No. 09/831,104  
Amdt. dated August 13, 2003  
Reply to Office Action of May 19, 2003

If any fee is due in conjunction with the filing of this Amendment and response, Applicants authorize deduction of that fee from Deposit Account 06-0308.

Respectfully submitted,

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Date



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